

REMARKS

Reconsideration of this application, as amended, is respectfully requested. By this Amendment, original drawing sheet 1/1 is being replaced with a replacement drawing sheet that deletes extraneous reference characters 19 and 20. The specification is being amended for added clarity, and claims 1 and 4-6 are being amended to more particularly point out and distinctly claim the subject invention. The addition of "new matter" has been scrupulously avoided. Claims 1-6 remain in this application.

In the Office Action, the drawings were objected to because reference signs 19 and 20 were not mentioned in the specification. These reference signs have been deleted from Replacement Sheet 1/1.

In the Office Action, claims 1 and 4 were rejected under 35 U.S.C. 103(a) as allegedly obvious over Iwata et al. (US Patent No. 5,827,409) in view of Gebele et al. (US Patent No. 5,228,838); claim 2 was rejected under 35 U.S.C. 103(a) as allegedly obvious over the same combination of references, further in view of Myneni (US Patent No. 5,703,281) and Hiesinger (US Patent No. 2,931,561); claim 3 was rejected under 35 U.S.C. 103(a) as allegedly obvious over the same combination of references, further in view of Myneni; and claims 5 and 6 were rejected under 35 U.S.C. 103(a) as allegedly obvious over the same combination of references, further in view of Wenk (US Patent No. 5,254,169).

These rejections, to the extent that they may be deemed applicable to the claims as now presented, are respectfully, but most strenuously traversed for the following reasons.

Amended independent claim 1 is directed to a sluice system for a vacuum coating facility for coating substrates moved through the vacuum coating facility in at least one direction of conveyance. The sluice system includes a prevacuum sluice chamber, a prevacuum pump system connected by a first selectively activatable valve arrangement to the prevacuum sluice chamber, and a high-vacuum pump system also connected to the prevacuum sluice chamber by a second selectively activatable valve arrangement. The second valve arrangement is activated and deactivated inversely to the first valve arrangement to realize a pressure cascade in a sequential operating mode until a high vacuum pressure stage is achieved in the prevacuum sluice chamber close to a coating process vacuum pressure.

Support for the added feature of independent claim 1 will be found in the last paragraph on page 4 of the substitute specification.

No such sluice system is taught, disclosed or suggested by the applied prior art, considered alone or in combination.

As described in the Background Art section of the current application, the present invention allows a single prevacuum sluice chamber to operate as both the prevacuum sluice chamber and the fine or high vacuum sluice chamber of prior art sluice systems. A separate high vacuum sluice chamber is no longer necessary and a high vacuum is generated in the same prevacuum sluice chamber. This high vacuum is generated close to the process vacuum pressure of approximately 10^{-4} bar to 10^{-5} bar. No such dual functionality is contemplated by the applied prior art nor are the resulting significant advantages achieved.

In the primary reference of Iwaka et al. a load-lock chamber 61 is evacuated to approximately 10^{-2} bar by the pumping system 611, and a prevacuum close to the process vacuum is generated within a second separate subload-lock chamber 62 by a second pumping system. This second pumping system which creates the high vacuum in the second subload-lock chamber 62 is not connected to prevacuum sluice chamber 61. Accordingly, the basic interconnection of a prevacuum pump system and a high vacuum pump system to the same prevacuum sluice chamber is conspicuously absent from this reference. Furthermore the claimed arrangement and operation of associated valves is also noticeably absent from this reference.

The second reference to Gebele et al. fails to overcome the above-described major deficiency of the primary reference.

Gebele et al. disclose mechanical pre-pumps 10 and 11 pumping against atmosphere. Pumps 8 and 9 are rotary slide-valve pumps. They may not pump against atmosphere and they need a pre-pump themselves, as well as the high vacuum pump 12. The valve arrangement of Gebele et al. is switched so that coating chamber 5 is evacuated first by pump 9, then by pumps 9 and 12, and finally just by high vacuum pump 12. The apparatus and method of Gebele et al. are therefore fundamentally different from the present invention because Gebele et al.'s pumps 9 and 12 evacuate the high vacuum process chamber 5 rather than the prevacuum chamber 4. Reference column 4, lines 12-47 of this reference.

Accordingly, the pump system and the valve system of Gebele et al. are not used for evacuating the prevacuum chamber, as claimed in claim 1 of the present invention; rather, the prevacuum chamber of Gebele et al. is evacuated by a vacuum pump 8 simply connected in series with the forepump 10, or by vacuum pumps 8 and 9, but never by high vacuum pump 12.

Accordingly, neither Iwata et al. nor Gebele et al., alone or in combination, teach the same approach as the present invention, nor do they realize the significant benefits afforded thereby.

The other applied references likewise fail to overcome the deficiencies of the primary references.

Therefore, amended independent claim 1 is believed to be in condition for allowance. The dependent claims are allowable for the same reasons as claim 1 from which they all ultimately depend, as well as for their additional limitations.

For all of the above reasons, the claims remaining in this application are believed to be in condition for allowance and such action is respectfully requested.

If it would advance the prosecution of this application, the Examiner is cordially invited to contact Applicant's representative at the below indicated telephone number.

Favorable consideration of this Request and granting of the Petition to revive the application are respectfully requested.

Respectfully submitted,



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Dated: March 15, 2011

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